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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,468	04/20/2006	Katsumi Yabusaki	287117US0PCT	7180
22850	7590	01/12/2009	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			MAIER, LEIGH C	
			ART UNIT	PAPER NUMBER
			1623	
			NOTIFICATION DATE	DELIVERY MODE
			01/12/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/576,468	<b>Applicant(s)</b> YABUSAKI, KATSUMI	
	<b>Examiner</b> Leigh C. Maier	<b>Art Unit</b> 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,13,15,17 and 19-30 is/are pending in the application.
- 4a) Of the above claim(s) 23-28 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-9, 13, 15, 17, 19-22 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of the Claims***

Claims 2, 10-12, 14, 16 and 18 have been cancelled. Claims 1, 3, 4, 8, 9, 13, 15 and 17 have been amended. Claims 19-30 are newly added. Claims 1, 3-9, 13, 15, 17 and 19-30 are pending. Any objection or rejection not expressly repeated has been withdrawn. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Newly submitted claims 23-28 and 30 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The newly submitted claims are drawn to a method of preparing the product currently under examination. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a different process. For example, the product could be prepared using a cellulose II starting material that has not been dried. Furthermore, the product specifies no particular “carbamidation” moiety. Therefore, a process using a reactant other than urea could be used.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 23-28 and 30 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

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The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. *All* claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained.

Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19-22 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite the limitation “dried” cellulose II. However, the specification gives no particular definition of “dried.” It is common for cellulose products to be called “dry” at some range of moisture content. See, for example, US 3,634,183 at col 3, line 46-55 or US 4,307,121 at paragraph bridging col 9-10. Furthermore, “dried” could mean “moisture-free” or “having been subjected to a process wherein the water content has been reduced from a starting amount to some lower amount.” The claims are rendered vague and indefinite as one of ordinary skill would not be able to determine the metes and bounds of the invention.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19-22 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that Applicant, at the time the application was filed, had possession of the claimed invention.

The claims recite the limitation “dried” cellulose II. As discussed above, this limitation could be interpreted in a variety of ways. However, the only reference found by the examiner with respect to “dried” cellulose II is at page 21, paragraph [0030] of the specification, wherein the cellulose II product is prepared by a particular process and then dried at 70° to an unstated moisture content. The specification therefore provides support for a product prepared and dried in this manner but not the full scope embraced by the term “dried cellulose II.”

### ***Claim Rejections - 35 USC § 103***

Claims 1, 3-5, 9, 13 and 15 are again rejected under 35 U.S.C. 103(a) as being unpatentable over de Magalhaes Padilha et al (Talanta, 1997) in view of Ford et al (US 2,482,755) and Zeronian et al (J. Appl. Polym. Sci., 1980). Newly added claims 19-22 and 29 are included in this rejection.

de Magalhaes Padilha teaches the use of cellulose phosphate in chromatographic columns for the adsorption of metal ions from aqueous solutions. See abstract, for example. The reference cites the method of Ford in preparing the cellulose phosphate. (The Ford reference cited in this action appears to be the one cited in de Magalhaes Padilha, but the patent number is truncated.) The cited method treats a cellulose substrate with a phosphoric acid in the presence of urea. See examples. The method does not exemplify a cellulose II product. However, the reference expressly suggests the use of cellulose substrates previously subjected to other processing, such as mercerization. See col 9, lines 46-50.

Zeronian teaches as set forth above. The reference further teaches that mercerization prior to phosphorylation has the beneficial effect of making the cellulose more receptive to the

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phosphorylating reagents and resulting in a more uniformly phosphorylated product. See page 522, lines 1-3 and paragraph bridging pages 527 and 528.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the metal-adsorbing system of de Magalhaes Padilha by modifying the method of preparing the cellulose phosphate used in said system. The artisan would be motivated to pretreat the cellulose starting material by mercerizing it as suggested by Zeronian in order to make the cellulose more receptive to the phosphorylating reagents and a more uniformly phosphorylated product. One of ordinary skill would reasonably expect success in making this modification. It would be further within the scope of the artisan to optimize the degree of phosphorylation for metal adsorption through routine experimentation. In carrying out the procedure in the presence of urea, the product would be carbamidated.

New claims 19-22 and 29 are recited as product-by-process claims. However, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In the instant case, there is no evidence that preparing the product with dried cellulose II confers some property that makes said product distinguishable from one prepared in another manner.

Applicant's arguments filed September 30, 2008, have been fully considered but they are not persuasive. It appears that Applicant's only argument is that Zeronian teaches away from phosphorylating dried mercerized cellulose. That argument might be germane to a process claim.

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However, the claims drawn to a method of making are currently withdrawn based on original presentation, as discussed above. The product-by-process claims are discussed above. It has not been shown that preparing the product in the manner taught by this combination of references falls outside the scope of the instant claims.

Claims 1, 3,4, 6, 7, 9, 13 and 15 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Reineke et al (US 4,851,120) in view of Zeronian et al (J. Appl. Polym. Sci., 1980). Newly added claims 19-22 and 29 are included in this rejection.

Reineke teaches that anionic polysaccharides, particularly cellulose derivatives, such as cellulose phosphate, in the form of membranes (or “fabric”) have utility for the adsorption of metal ions. See col 2, lines 20-26 and col 3, lines 36-55. The reference suggests the preparation of cellulose phosphate by reacting cellulose with phosphoric acid and urea. See col 3, lines 13-17. The reference further teaches that the membranes may be formed into any desirable shape such as convex, concave or tubular. See col 4, lines 48-55. The reference does not teach the use of a cellulose II phosphate.

Zeronian teaches as set forth above.

It would have been obvious to one having ordinary skill in the art at the time the invention to prepare metal-adsorbing membrane comprising cellulose phosphate by preparing said cellulose phosphate by reacting cellulose with phosphoric acid and urea, as suggested, with the modification of mercerization pretreatment taught by Zeronian. The artisan would be motivated to make said modification in order to make the cellulose more receptive to the phosphorylating reagents and a more uniformly phosphorylated product. One of ordinary skill



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would reasonably expect success in making this modification. It would be further within the scope of the artisan to optimize the degree of phosphorylation for metal adsorption through routine experimentation. With respect to claims 6 and 7, the references do not specifically teach the use of the product in the form bag or a cylinder or fabric inside a water storage tank. However, it is noted that a bag could be construed essentially as any non-flat membrane, as suggested by the reference. The reference expressly suggests the treatment of water, so it would be obvious to one of ordinary skill to use the product in an appropriate form in any apparatus where water is processed or stored. In carrying out the procedure in the presence of urea, the product would be carbamided.

New claims 19-22 and 29 are recited as product-by-process claims. However, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In the instant case, there is no evidence that preparing the product with dried cellulose II confers some property that makes said product distinguishable from one prepared in another manner.

Applicant's arguments filed September 30, 2008, have been fully considered but they are not persuasive. It appears that Applicant's only argument is that Zeronian teaches away from phosphorylating dried mercerized cellulose. That argument is addressed above.

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Claims 1, 2, 4, 8, 9, 13, 15 and 17 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Bernadin (US 3,691,154) in view of Zeronian et al (J. Appl. Polym. Sci., 1980). Newly added claims 19-22 and 29 are included in this rejection.

Bernadin teaches the preparation of cellulose phosphate using the urea phosphate method, followed by the conversion to an alkali metal salt. See col 2, lines 15-64. The reference does not teach a cellulose II phosphate.

Zeronian teaches as set forth above.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to prepare the cellulose phosphate by preparing said cellulose phosphate product by the urea phosphate method, as suggested, with the modification of mercerization pretreatment taught by Zeronian. The artisan would be motivated to make said modification in order to make the cellulose more receptive to the phosphorylating reagents and a more uniformly phosphorylated product. One of ordinary skill would reasonably expect success in making this modification. It would be further within the scope of the artisan to optimize the degree of phosphorylation for metal adsorption through routine experimentation. In carrying out the procedure in the presence of urea, the product would be carbamidated.

New claims 19-22 and 29 are recited as product-by-process claims. However, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In the instant case, there is no evidence that preparing the product with

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dried cellulose II confers some property that makes said product distinguishable from one prepared in another manner.

Applicant's arguments filed September 30, 2008, have been fully considered but they are not persuasive. It appears that Applicant's only argument is that Zeronian teaches away from phosphorylating dried mercerized cellulose. That argument is addressed above.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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***Examiner's hours, phone & fax numbers***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leigh Maier whose telephone number is (571) 272-0656. The examiner can normally be reached on Tuesday, Wednesday, and Friday 7:00 to 3:30 (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Anna Jiang (571) 272-0627, may be contacted. The fax number for Group 1600, Art Unit 1623 is (571) 273-8300.

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/Leigh C. Maier/  
Primary Examiner, Art Unit 1623  
January 5, 2009